

Features

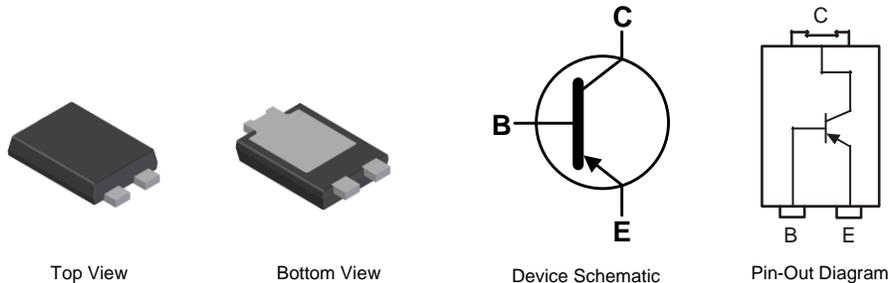
- $BV_{CEO} = -200V$
- $I_C = -2A$ High Continuous Collector Current
- $I_{CM} = -5A$ Peak Collector Current
- P_D up to 3.2W
- 43% smaller than SOT223; 60% smaller than TO252 (DPAK)
- Maximum height just 1.1mm
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Application

- DC – DC Conversion
- Telecoms
- Power Management

Mechanical Data

- Case: PowerDI[®]5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.093 grams (Approximate)

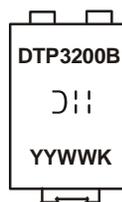


Ordering Information (Note 4)

| Product | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-----------------|------------|----------|--------------------|-----------------|-------------------|
| DXTP03200BP5-13 | AEC-Q101 | DTP3200B | 13 | 16 | 5,000 |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



DTP3200B = Product Type Marking Code
 DII = Manufacturers' Code Marking
 K = Factory Designator
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 09 for 2009)
 WW = Week Code (01 to 53)

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | -220 | V |
| Collector-Emitter Voltage | V _{CEO} | -200 | V |
| Emitter-Base Voltage | V _{EBO} | -7 | V |
| Continuous Collector Current | I _C | -2 | A |
| Base Current | I _B | -1 | A |
| Peak Pulse Current | I _{CM} | -5 | A |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

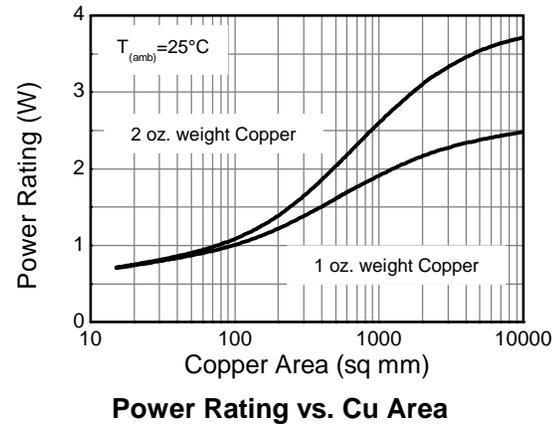
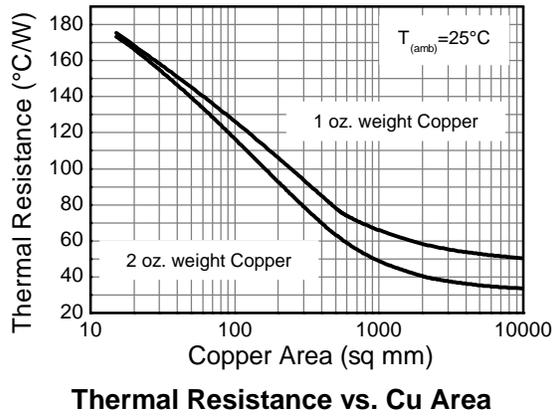
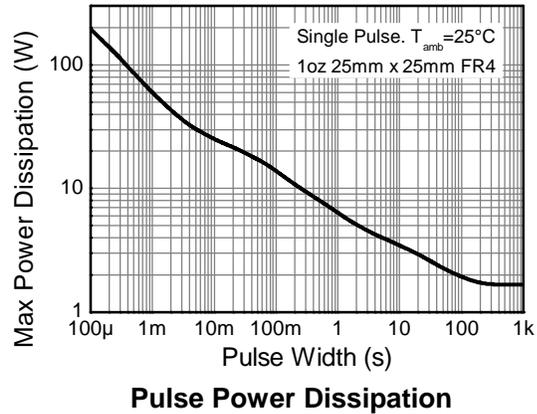
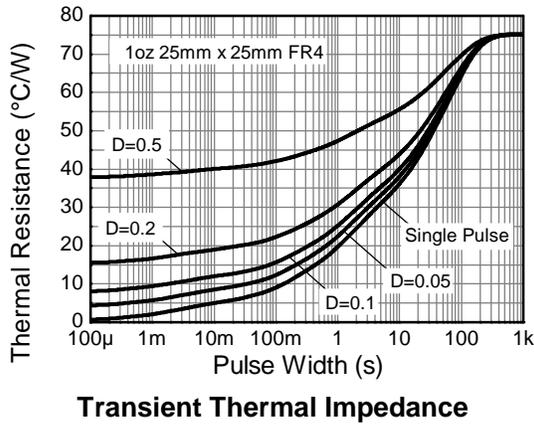
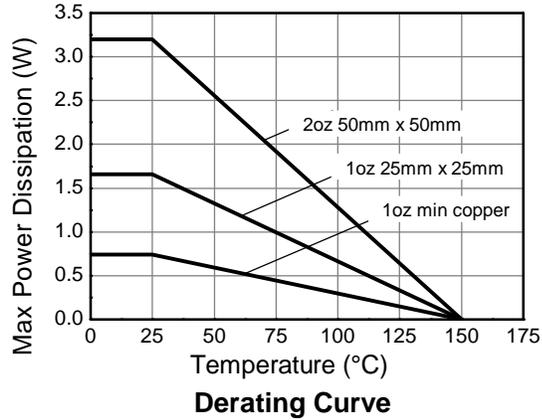
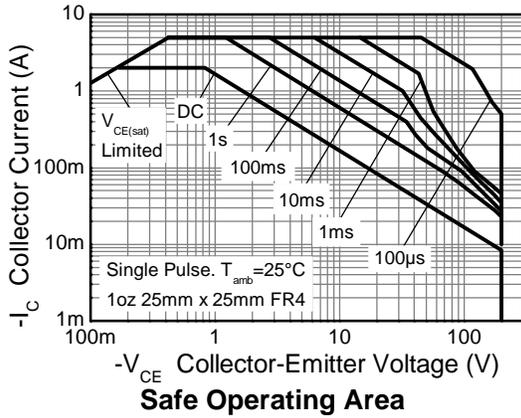
| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) | P _D | 3.2 | W |
| Thermal Resistance, Junction to Ambient Air (Note 5) | R _{θJA} | 39 | °C/W |
| Power Dissipation (Note 6) | P _D | 1.7 | W |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R _{θJA} | 75 | °C/W |
| Power Dissipation (Note 7) | P _D | 0.74 | W |
| Thermal Resistance, Junction to Ambient Air (Note 7) | R _{θJA} | 169 | °C/W |
| Thermal Resistance, Junction to Lead (Note 8) | R _{θJL} | 5.6 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 9)

| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | 400 | V | C |

- Notes:
5. Device mounted on FR-4 PCB, single sided 2 oz. copper, collector pad dimensions 50mm x 50mm.
 6. Device mounted on FR-4 PCB, single sided 1 oz. copper, collector pad dimensions 25mm x 25mm.
 7. Device mounted on FR-4 PCB, single sided 1 oz. copper, minimum recommended pad layout.
 - 8 Thermal resistance from junction to solder-point (on the exposed collector pad).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

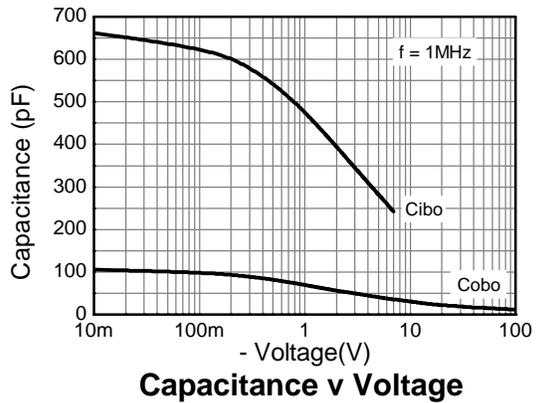
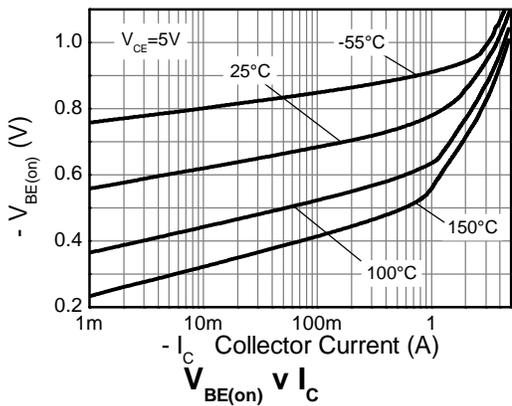
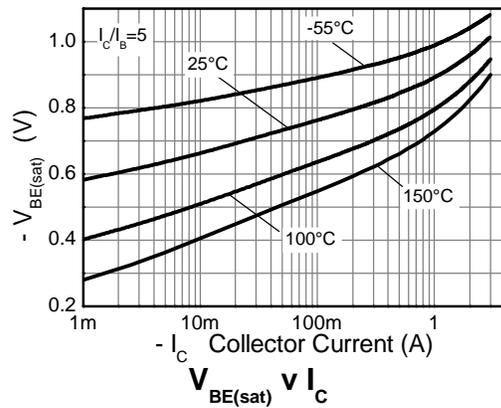
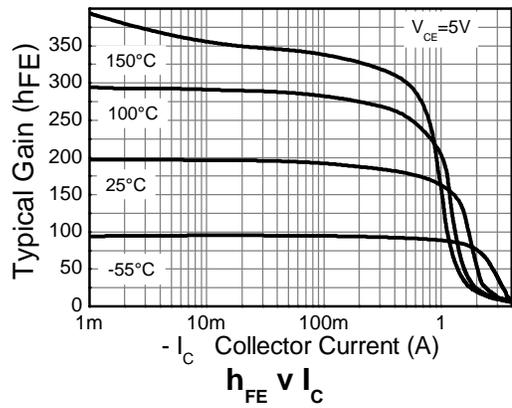
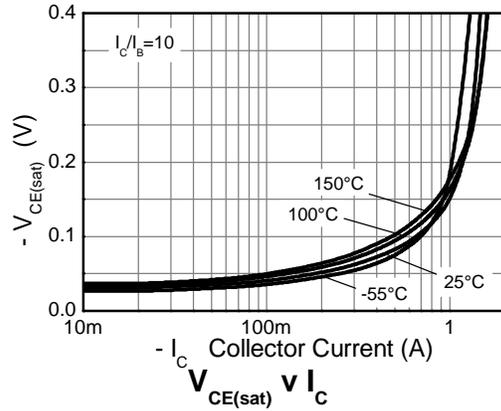
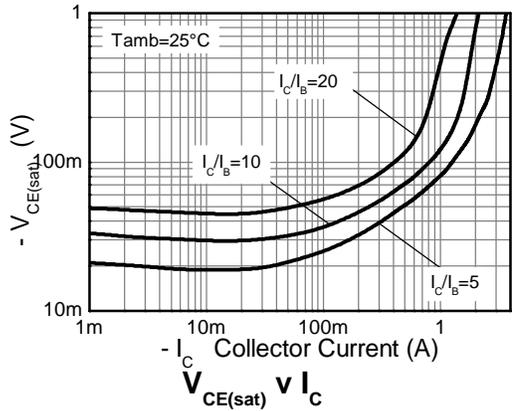


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|----------------------|-----------------------|-----------------------------|-----------------------------|----------|--|
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | -220 | -245 | - | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 10) | V _{(BR)CEO} | -200 | -225 | - | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -7 | -8.4 | - | V | I _E = -100μA |
| Collector Cutoff Current | I _{CBO} | - | <1 | -50 -0.5 | nA μA | V _{CB} = -200V V _{CB} = -200V, T _A = +100°C |
| Emitter Cutoff Current | I _{EBO} | - | <1 | -10 | nA | V _{EB} = -6V |
| Collector-Emitter Saturation Voltage (Note 10) | V _{CE(sat)} | - | -37 -130 -135 -180 | -50 -155 -160 -275 | mV | I _C = -0.1A, I _B = -10mA I _C = -0.5A, I _B = -25mA I _C = -1A, I _B = -100mA I _C = -2A, I _B = -400mA |
| Base-Emitter Saturation Voltage (Note 10) | V _{BE(sat)} | - | -955 | -1,100 | mV | I _C = -2A, I _B = -400mA |
| Base-Emitter Turn-On Voltage (Note 10) | V _{BE(on)} | - | -860 | -1,000 | mV | V _{CE} = -5V, I _C = -2A |
| DC Current Gain (Note 10) | h _{FE} | 100 100 20 - | 195 170 50 5 | - 300 - | - | V _{CE} = -5V, I _C = -10mA V _{CE} = -5V, I _C = -1A V _{CE} = -5V, I _C = -2A V _{CE} = -5V, I _C = -5A |
| Transition Frequency | f _T | - | 105 | - | MHz | V _{CE} = -10V, I _C = -100mA, f = 50MHz |
| Output Capacitance | C _{obo} | - | 31 | - | pF | V _{CB} = -10V, f = 1MHz |
| Delay Time | t _d | - | 21 | - | ns | V _{CC} = -50V, I _C = -1A, I _{B1} = -I _{B2} = -100mA |
| Rise Time | t _r | - | 18 | - | ns | |
| Storage Time | t _s | - | 680 | - | ns | |
| Fall Time | t _f | - | 75 | - | ns | |

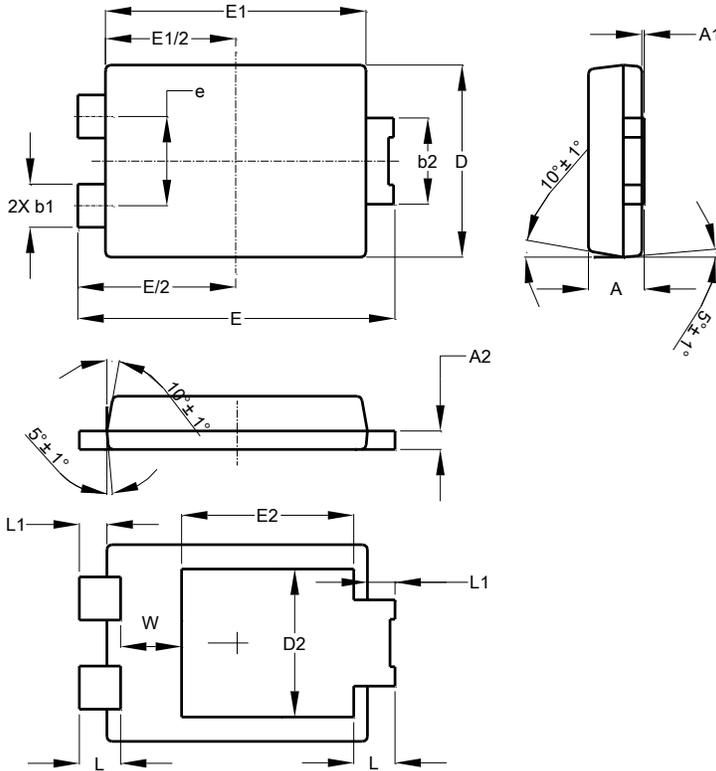
Note: 10. Pulse Test: Pulse width ≤300μs. Duty cycle ≤2.0%.

Typical Characteristics



Package Outline Dimensions

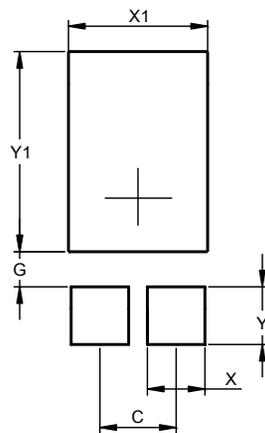
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| POWERDI [®] 5 | | | |
|------------------------|------|------|-------|
| Dim | Min | Max | Typ |
| A | 1.05 | 1.15 | 1.10 |
| A1 | 0.00 | 0.05 | -- |
| A2 | 0.33 | 0.43 | 0.381 |
| b1 | 0.80 | 0.99 | 0.89 |
| b2 | 1.70 | 1.88 | 1.78 |
| D | 3.90 | 4.05 | 3.966 |
| D2 | -- | -- | 3.054 |
| E | 6.40 | 6.60 | 6.504 |
| e | -- | -- | 1.84 |
| E1 | 5.30 | 5.45 | 5.37 |
| E2 | -- | -- | 3.549 |
| L | 0.75 | 0.95 | 0.85 |
| L1 | 0.50 | 0.65 | 0.57 |
| W | 1.10 | 1.41 | 1.255 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 1.840 |
| G | 0.852 |
| X | 1.390 |
| X1 | 3.360 |
| Y | 1.400 |
| Y1 | 4.860 |

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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